



Review: [Untitled]

Reviewed Work(s):

Structure of Texas Vegetation East of the 98th Meridian. by B. C. Tharp
R.S.A.

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steep, the valleys without flat bottoms, and the vegetation dense with little continuous forest. The area has been little interfered with either for farming or lumbering. The climate has a winter rainfall and typically a dry rainless summer. The character of the vegetation is influenced by the proximity to the sea on the west and the relatively arid conditions on the east of the range. Altitude has little effect on the distribution; more important are slope, amount of soil, and prevalence of summer fogs. Very sharp local contrasts of vegetation are frequent.

Four vegetation types are recognised: *Hygrophytic Forest*, *Mesophytic Forest*, *Chaparral*, and *Grassland*. These represent a series of increasing dryness. The *Hygrophytic Forest* is generally dominated by *Sequoia sempervirens* often associated with *Lithocarpus densiflora*, and occurs in the larger canyons on the coastal slopes. In the largest canyons heavy pure stands or groves of redwoods extend 600–800 ft. up the slopes and to a distance of 6–8 miles from the sea. Isolated redwood groves occur near the sea up to 1500 ft. The redwoods cast a dense shade and the associated plants are of a hygrophytic type though less so than in the corresponding forest further north. The *Mesophytic Forest* never forms extensive pure woodlands but is very much diversified both in species and in the type of tree. While evergreen oaks are the most general dominants they are associated with a number of other trees including conifers (*Pinus*, etc.). The shrubs that occur here are those associated with the moister parts of the Chaparral. *Chaparral* occupies more than half the area. It is exceedingly varied in composition in different portions. The features of several types are described. *Grassland*, which is only active in the spring and passes most of the year in a dormant state, is regarded as the most xerophytic type. Grasslands occur on soils about 1–2 ft. in depth. On the ocean side grassland is frequent on rounded wind swept ridges. The distribution of these types in a limited portion is described and a map of this area is given.

R. S. A.

Kelley, A. P. "Dune Formation by Pine Barren Plants." *Bot. Gaz.* **83**, pp. 89–93, 2 photos in text. 1927.

The Pine Barren region of southern New Jersey is an extensive system of sand dunes covered for the most part by forest, largely composed of pines. The forest floor has a fairly complete covering of vegetation. Wherever a plant dies the sand becomes exposed and is very easily removed by wind. A hollow is scooped out, the sand carried away, and ultimately deposited against some protruding object. The pine trees on the sand hills produce basal whorls of branches that tend to accumulate sand. The branches get buried by sand but the tips continue upward growth. Growth in these branches continues even after the main tree dies, and a sand hill is produced. In addition to such isolated sand hills, long dunes are formed, especially at the junction of the pine and oak forests. The sand drifts through the rather open pine forest but is stopped by the closer growth of the oak forest. In the Pine Barren region dune movements are rather slow and the pines can in most cases keep pace with them.

R. S. A.

Tharp, B. C. "Structure of Texas Vegetation East of the 98th Meridian." *Univ. Texas Bull.* No. 2606, pp. 97, 30 plates. 1926.

This is an extensive study of the vegetation of the eastern part of the State of Texas. The area covered represents about 80,000 square miles. After a general discussion of the work of previous investigators, a short account follows of the climatic, geological, and topographic features. The greatest precipitation occurs in the south-east. The land rises from the coast to a height of 1000 ft. in the north-west part of the area. The various geological formations outcrop roughly parallel to the coastline.

The classification of the vegetation and the terminology follow the scheme of Clements. The term "society" is used mainly to designate the layers, though aspect societies are also recognised. Four formations are distinguished, *Southern Evergreen Forest*, *Deciduous Forest*, *Prairie Grassland*, and *Mesquite Woodland*.

The first of these occupies the largest area and the region of most precipitation and moisture. The dominating tree here is *Pinus palustris*, associated with *P. taeda* in the southern

parts, and with *P. echinata* in the northern. A description and list of the climax is given. In this part a hydrosere is traced up to a hardwood forest through *Taxodium* swamp. The relation of this forest to the climax pine forest is discussed. Pines do not appear to invade till the streams cut down so far that drainage occurs. The *Taxodium*-hardwood forest is looked upon as an edaphic subclimax. The pine forests have been very much reduced in extent at the hands of the lumberman. The cut areas are especially liable to fire, and under such conditions the pines reproduce very slowly. Frequently the ground becomes occupied by thickets of dicotyledonous shrubs that occur as accessory species in the climax. Pine regeneration takes place readily when fire is prevented, especially if seed trees are left.

The Deciduous Forest always occurs on sands on the higher ground further inland than the pine forest. *Quercus stellata* is the general dominant though often associated with *Q. marylandica* and *Carya buckleyi*. This forest is of rather limited extent. When the forest is cut regeneration by coppice occurs freely. Where cutting is followed by intensive grazing grassland becomes established, but as soon as conditions allow the forest regenerates. There is a broad transition zone between these two types of forest, where a mixed Pine-Oak forest is developed which occupies larger areas than the deciduous forest.

Inland of the deciduous forest occurs the Prairie Grassland which is found on heavy black soils. This association has been much altered by grazing and cultivation and anything approaching a natural climax can only be found where protection has been afforded. In such spots *Andropogon saccharoides* and other species, with *Stipa leucotricha*, are the dominants. *Bulbilis dactyloides* and *Aristida* dominate in overgrazed parts.

Secondary successions have been traced in abandoned arable land. If undisturbed the climax is attained in about 25-30 years. The effects of grazing are described, also the invasions of woody plants. The prairie has a broad transition zone with the pine and deciduous forests where there are alternating areas of the two types.

The Oak-Cedar-Mesquite Woodland only occurs on the western limits of the area studied and is briefly described.

A large area, 10,000 square miles, of flat land along the coast is covered by grassland of rather varied composition. This coastal prairie extends from regions of 50 in. rainfall to those of 30 in. It is regarded as being composed of seral units, and invasions by woody plants of the bordering communities are described. The coastal marshes are closely associated with this prairie and shade off into it.

For each formation lists of the species occurring are given, subdivided according to the parts played by each of the plants. The account is illustrated by a large number of excellent photographs.

R. S. A.

Ostenfeld, C. H. "The Flora of Greenland and its Origin." *Det Kgl. Danske Vidensk. Selsk. Biol. Med.* 6, 3. 1926.

The flora of Greenland, at any rate as far as the vascular plants are concerned, has now been fairly well worked out. In this flora 390 species are known. In this estimate many of the species are somewhat aggregate Linnean species though in some genera smaller units are available. The distribution of these plants has now been worked out for the whole country along the coastal belt, the only part where flowering plants occur in any quantity. After a brief summary of previous work on the flora and of the theories that have been put forward as to its origin, the question of its age is discussed. At the present time flowering plants are found on rocky walls or ledges which are free from ice, known as "nunataks," even as far north as 81° N. Lat. The existence of these plants in conditions that are quite glacial, lends support to the view that some plants in the flora date from preglacial times. The number of these survivors is not large however, the great majority of the flora having come in since the period of maximum glaciation.

In the south and south-west of Greenland there were at one time Norse colonies of which remains exist. These settlements were occupied for 400-500 years up to about the middle of the fifteenth century. About 50 plants in the flora which are almost or quite confined to this region are regarded as owing their origin to the Norse colonists.

Greenland is divided into 15 divisions for purposes of plant distribution. The species are further divided according to their phytogeographical types; high arctic, arctic, and sub-arctic. They are also grouped according to their distribution outside Greenland. The results for the floras of each division are set out in a table. The analysis brings out very strongly the much more abundant flora on the west coast as compared with that on the east. Several